

*Screw Worm
Read*

AIR MAIL

September 30, 1959

TO : Dr. A. W. Lindquist, Chief, Insects Affecting Man and
Animals Research Branch

FROM : R. O. Drummond, Acting-in-Charge, Insects Affecting
Animals Section

SUBJECT: Second Interim Report on Screw-worm Work

At the present time we are able to forward to you results of the second series of tests using sheep artificially infested with screw-worms.

Percentages of compounds used were as follows: .5% Bayer 22,408, 1% malathion, and 2% Sevin. Results are summarized in tables 1 and 2.

Briefly, Bayer 22,408 was 100% effective against both 2- and 3-day-old screw-worm larvae. Residual effectiveness was somewhat erratic. Some animals went out of test at 48 hours after treatment.

One percent malathion was 100% effective against 2-day-old larvae and 80% effective against 3-day-old larvae. Residual effectiveness was quite short.

Two percent Sevin was effective against both ages of larvae, and sheep were protected for two days.

The test to determine the efficiency of the dusting apparatus has been completed. Ten cattle, each infested with 1-, 2-, and 3-day-old screw-worm larvae were run through the machine. All the screw-worms were killed by the dust, and half the animals were out of test at the third day after treatment. Results of this test are summarized in tables 3 and 4.

A third series of tests was started on September 24. These animals, of course, are still in test but the following results have been obtained thus far: .25%, .5%, and 1% Bayer 22,408 were all approximately equal in giving kill of 2- and 3-day-old larvae in sheep. Ten sheep were treated at each concentration and all the larvae were killed. Ten sheep were also treated with 2% Sevin. This compound was 70% effective against 3-day-old larvae and 100% effective against 2-day-old larvae. All three concentrations of Bayer 22,408 are providing apparent protection to reinfestation through 4 days after treatment.

September 30, 1952

ALL MAIL

TO : Dr. A. W. Lindquist, Chief, Insect Infestation and
Animal Research Branch

FROM : E. G. Lawrence, Acting-In-Charge, Insect Infestation
Animal Section

SUBJECT: Second Interim Report on Bitter-root Bark

At the present time we are able to forward to you results of the
second series of tests using sheep experimentally infested with
worms.

Percentages of compounds used were as follows: 25 Bitter 22,408,
12 Malathion, and 22 Sevin. Results are summarized in Tables 1 and 2.

Briefly, Bitter 22,408 was 100% effective against both 1- and 3-day-old
bitter-root larvae. Residual effectiveness was somewhat erratic. Some
animals went out of test at 24 hours after treatment.

One percent malathion was 100% effective against 1-day-old larvae and
80% effective against 3-day-old larvae. Residual effectiveness was
quite short.

Two percent Sevin was effective against both ages of larvae, and sheep
were protected for two days.

The test to determine the efficiency of the dusting operation has been
completed. The cattle, each infested with 1-, 2-, and 3-day-old larvae,
were treated with the dust. All the animals were
killed by the end of the test, and half the animals were out of test at the end of
the first treatment. Half of the animals were out of test at the end of the
second treatment.

A third series of tests was started on September 25. These animals, of
course, are still in test but the following results have been obtained
thus far: 10% Bitter 22,408 and 12 Sevin are all approximately equal
in killing 1- and 3-day-old larvae in sheep. The sheep were
treated on each treatment and all the larvae were killed. The sheep
were also treated with 22 Sevin. This treatment was the most effective against
1-day-old larvae and 100% effective against 3-day-old larvae. All three
percentages of Bitter 22,408 and 100% effective against 3-day-old larvae. All three
percentages through 4 days after treatment.

In regard to our conversation of Friday, 10 cattle have been treated as follows: 3 with 1.5% malathion, 3 with 2% malathion, and 4 with 4% Sevin. The cattle at time of treatment were infested with 1-, 2-, and 3-day-old screw-worm larvae and the test was run jointly with Dr. Radeleff cooperating on toxicology. The animals are still alive and we have no data to present on the effectiveness against screw-worm larvae.

In field test Mr. Wrich has used .5% and 1% Bayer 22,408, .25% and .5% Co-Ral, and 2% Sevin. In addition he is doing more field work at the present time. None of the results have been reported by the cooperating ranchers.

Mr. Poeske has informed me that we have used 100 sheep in our tests thus far. As of your letter of August 20 to Dr. Sharman, 100 sheep was the limit set for entomological studies. With the addition of the higher concentrations of malathion and Sevin we feel that we have to treat more sheep at these higher concentrations in order to be able to know their effectiveness against screw-worm larvae. Although we have used 100 sheep the cost has not been up to that estimated in the letter. Mr. Poeske estimates we have approximately \$900 left to buy animals for our entomological studies. We have purchased an additional 40 sheep with which to run tests next week. The additional cost of these sheep is within the \$900 left in the budget. We feel that with the data gained from treating these sheep we would be able to recommend one or more of these concentrations to be used against screw-worms on the quarantine line.

All this data will be discussed with Dr. Bushland immediately upon his return so that he may evaluate the results thus far. However, these interim reports are being sent to you so that you may be informed of the progress on this project.

Enclosures: Tables 1-4.

In regard to our conversation of Friday, 10 cattle have been treated as follows: 3 with I. 5% mafenidon, 3 with 2% mafenidon, and 4 with 4% mafenidon. The cattle at time of treatment were infested with 1-, 2-, and 3-day-old screw-worm larvae and the test was run jointly with Dr. Rabeloff cooperating on toxicology. The animals are still alive and we have no data to present on the effectiveness against screw-worm larvae.

In field test Mr. Wright has used .5% and 1% DDT, 2% and 3% DDT, and 5% DDT. In addition he is doing more field work at the present time. None of the results have been reported by the cooperating ranchers.

Mr. Focke has informed us that we have used 100 sheep in our tests thus far. As of your letter of August 30 to Dr. Shattuck, 100 sheep was the limit set for entomological studies. With the addition of the higher concentrations of mafenidon and DDT we have to treat more sheep at these higher concentrations in order to be able to know their effectiveness against screw-worm larvae. Although we have used 100 sheep the cost has not been up to that estimated in the letter. Mr. Focke estimates we have approximately \$500 left to buy animals for our entomological studies. We have purchased an additional 40 sheep with which to run tests next week. The additional cost of these sheep is within the \$500 left in the budget. We feel that with the data gained from treating these sheep we will be able to recommend one or more of these concentrations to be used against screw-worm on the quarantine line.

All this data will be discussed with Dr. Bushland immediately upon his return so that he may evaluate the results thus far. However, these interim reports are being sent to you so that you may be informed of the progress on this project.

Enclosures: Tables 1-4.

Table 1. Initial kill afforded by treating artificial screw-worm wounds in sheep with three compounds. (Treated September 17, 1959.)

Compound and Percent Concentration	No. Sheep Treated	Age of Larvae Days-old	Number of Wounds	
			Inflicted	All Worms Dead
Bayer 22,408 0.5	12	3	12	12
		2	12	12
Malathion 1.0	10	3	10	8
		2	10	10
Sevin 2.0	10	3	10	10
		2	10	10

Table 2. Residual effectiveness of three compounds against screw-worms.

Compound and Percent Concentration	No. Sheep Treated	Number of Sheep out of Test ^{1/} Days After Treatment										
		1	2	3	4	5	6	7	8	9	10	
Bayer 22,408 0.5	12	:	:	:	:	:	:	:	:	:	:	:
		:	1	:	2 ^{2/}	1+1 ^{2/}	:	:	4	1	:	:
Malathion 1.0	10	:	2	1 ^{2/}	:	1	:	1	:	2	1	1
		:	:	:	:	:	:	:	:	:	:	:
Sevin 2.0	10	:	3	2+1 ^{2/}	1+1 ^{2/}	:	:	:	1	:	:	:
		:	:	:	:	:	:	:	:	:	:	:

^{1/} Some animals still in test September 29.

^{2/} Animals still in test that died from a bacterial infection.

Table 3. Initial kill afforded by treating artificial screw-worm wounds in 10 cattle with 5% Co-Ral dust.

Age of Larvae Days Old	Number of Wounds	
	Inflicted	All Worms Dead
3	20	20
2	20	20
1	20	20

Table 4. Residual effectiveness of 5% Co-Ral dust against screw-worms.

Days after Treatment	Number of Animals Out of Test
1	
2	
3	5
4	2
5	
6	
7	
8	3

